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MAPLE SUGAR INDUSTRY

1. Typical Vermont Sugar House.

2. In the Sugar Orchard.

3. Tapping a Tree.

4. Gathering the Sap.
   Ninety Gallons Gathered in an Hour.

5. Sap Running into Tanks.

6. Boiling the Sap.

MAPLE SUGAR INDUSTRY

THE five important kinds of commercial sugar are cane sugar, beet sugar and sugar made from corn, sorghum, and the sap of the maple tree. All species of the maple have a sweet sap, but the most important for the making of sugar and sirup are the sugar maple, the black maple, the red maple, the silver maple and the Oregon maple. The last three named, which thrive in low and swampy soils, do not produce sirup or sugar of such high grade and do not give as heavy a yield as do the sugar maple and the black maple, which grow on higher and drier land. These trees are found in New England, New York, Pennsylvania, the Southern Appalachians, the Ohio Valley, the Lake States and those parts of Canada lying near the northeastern section of the United States.

The Indians had discovered the sugar-making qualities of the maple tree long before the advent of the white man and were able to make sugar and sirup in a crude way. They thickened the sap by placing it in clay or birch bark vessels and dropping in heated stones. This method has been greatly improved and all commercial maple sirup and sugar are now made according to more or less scientific methods.

In the early spring, when the severe cold of the winter has been succeeded by a few warm days, the sap begins to rise in the trees. Then the farmer gets ready to gather the sap. He taps the trees by boring in each a clean-cut hole about a half-inch in diameter and from one to three inches deep, according to the size of the tree. A metal spile, or spout is then driven in tightly and a bucket is attached to catch the sap. Usually two or three buckets are hung on each large tree. Some farmers still use as a spout a hollowed-out branch of sumach or elder.

The sap continues to run as long as the weather remains warm, but a cold snap will cause it to cease flowing. During a season there may be as many as fifteen days in which these "runs" occur or there may be only a very few. The seasons average about three weeks and from five to eight runs. The first runs produce the lightest colored and best flavored sirup, while the last run, usually at the time when the buds are opening, gives a sirup with a taste which is popularly called "buddy."

The amount of sap from a single tree varies from eight to fifty gallons, according to the season, the individual tree, and the amount of foliage during the preceding summer. The average yield is about fifteen gallons. The amount of sap necessary to produce a gallon of sirup weighing eleven pounds averages from forty to fifty gallons. This means that an average tree produces about two and one-half pounds of sugar.

At the smaller sugar camps, the sap is usually poured from the buckets into a round wooden tank, as shown in the film. At the larger camps, however, the sap is poured into elevated tanks situated at convenient places throughout the maple grove, and is delivered to the sap house through pipes.

In the picture shown, three of these collecting tanks are seen outside the sap house. A rubber pipe is introduced into each tank and the sap flows down through a strainer into the evaporating pans. These pans are made of tin plate resting upon a heavy fire box and are generally from ten to fifteen feet long and from three to four feet wide. The sap flows into the first of the many compartments into which the pan is divided. After some of the water has boiled away, the sap is siphoned into the next compartment, while fresh sap is again introduced into the first compartment. In this manner each division of the pan con-

tains only sap which has undergone the same amount of boiling. As the sap becomes more and more concentrated, it is drawn from one to another compartment along the sap pan, until it is finally run out of the last division as maple sirup. During the process of boiling, the surface must be constantly skimmed. Although the sap as it comes from the tree has the color of water and has been strained, the mineral matter in it is coagulated by boiling and must be removed to obtain a clear sirup.

Maple sirup of standard grade should contain not more than 35% of water and should weigh not less than eleven pounds to the gallon.

The small producers usually ship their sirup in tightly sealed cans or in cans with screw tops. Some farmers retail all their sirup and sugar, but many combine their output and sell to wholesale grocers, brokers, or maple sugar companies. The former receive from 80 cents to $2.00 per gallon, while the latter rarely receive as much as $1.50 per gallon. The price, of course, varies with the color and the flavor.

In respect to flavor, sirup is classified as mild, strong, buddy or "molasses-like."

Maple sugar is produced by a further boiling of the sap, or sirup, until most of the water is driven out, when it is poured into moulds to form the familiar maple sugar cakes of the grocer and confectioner.

Where transportation is difficult, all of the sirup may be reduced to sugar as this is more easily carried. This sugar may again be turned into sirup by adding water and heating, but the flavor is not as good as that of the original sirup.

Questions, Topics, Suggestions

1. If possible, bring in leaves of different species of maples for identification.
2. Have children tell uses to which maple sugar and sirup are put.
3. What causes the sap to rise in the trees?
4. How is the sap obtained?
5. What states produce maple sirup?
6. The average annual yield is over 2,000,000 gallons of sirup.
7. From text of syllabus, determine how much sugar can be made from one gallon of standard sirup.
8. Vinegar is made from the scrapings of the pans and from the poorer grades of sugar. How?
9. All utensils used must be kept absolutely clean to prevent fermentation of sap.

References

Bryan, A. H. Maple sap sirup: its manufacture, composition, and effect of environment thereon. U. S. Bureau of Chemistry. Bul. 134, Wash., 1910; 110 pp. (Very complete bibliography at end of above.)

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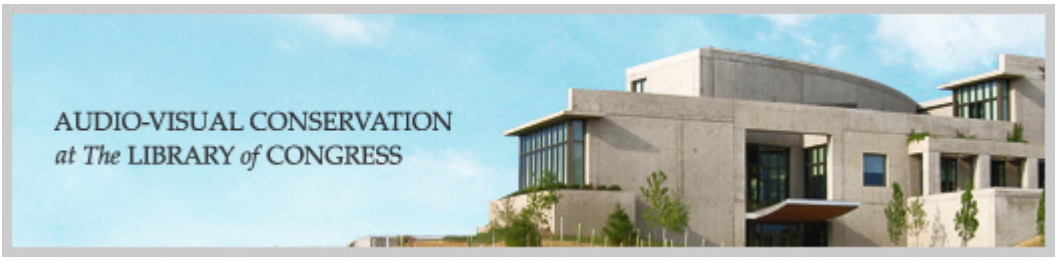

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